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While many standard mathematical equations and inequalities can be proven using induction, finding other types of problems which require this technique can be challenging. We would like to share one such example that we assign in a sophomore level proof writing course. It is designed to assist students in learning the crucial skills of reading, analyzing, and presenting an appropriately detailed mathematical induction argument. Unlike many inductive proofs, which require only a short period of time to solve, this problem often necessitates that students spend several weeks thinking and learning about it. In particular, the assignment asks students to solve an updated version of a classic handshake problem (whose original incarnation can be found in the work of Halmos). In doing so, students determine both the merits and possible pitfalls of their proposed solutions. The project culminates with them finely honing a clear, detailed narrative that conveys their inductively argued results. In our presentation, we will highlight the papers submitted, show several samples of student work, and share with the audience the positive evidence that this assignment has helped students to improve their individual skills with regard to problem solving and mathematical exposition. (Received September 19, 2007)